REMARKS

The Office Action has rejected Claims 1, 3-6, 8-27, 39-53, 53-60 and 63-65 under 35 U.S.C. §103(a) as defining subject matter which is allegedly rendered obvious by the teachings in U.S. Patent No. 5,466,294 to Kearney et al. ("Kearney et al."), WO 96/10650 of which Hyoky et al. are inventors ("Hyoky et al.") or U.S. Patent No. 6,379,735 to Yukio et al. ("Yukio et al.") in view of the teachings in U.S. Patent No. 4,432,806 to Madsen et al. ("Madsen et al.").

Applicants have amended the claims, which when considered with the comments herein are deemed to place the present case in condition for allowance. Favorable action is respectfully requested.

At the outset, applicants wish to thank Examiner Wong for granting a personal interview in the United States Patent and Trademark Office ("USPTO") on April 17, 2008 with applicant's attorney, and with John Jensen, an inventor and with an employee of the assignee, Marja-Leena Sarkki. Applicants also wish to thank Examiner Wong for the courtesy and helpful suggestions.

Initially, applicants have cancelled Claims 1-64 without prejudice and have added Claims 65-102. Claims 65 and 66, 88 and 89 are supported by the disclosure. See, for example, the disclosure on page 15, line 31 to page 26, line 26; and page 26, line 29 to page 29, line 10 and page 11, lines 26-30 of the instant specification. Claims 67-87 are rewritten from Claims 6, 8-10, 12-18, 20, 21, 23, and 25-27, respectively, and Claims 80-101 were based on Claims 40, 42, 43, 44, 45, 47, 48, 49, 50, 51, 63 and 64 respectively that were previously pending in the above-identified application.

Furthermore, applicants have not abandoned the deleted subject matter, but reserve the right to file a continuation application.

No new matter is added to the application directed thereto.

It is to be noted that as described in the application, the product formed from membrane filtration and chromatographic separation is to be added to food for human consumption. Support is found throughout the specification. For example, the specification refers to foods that the product is to be added, such as soft drink, sports drink, tea, coffee, beer, alcoholic beverages, soup, juice, jams, chocolate products, ice cream. See page 27, lines 14-22 and page 28, lines 10-17 of the instant specification. These are examples of foods that are consumed by humans. Thus, it is clear to the person of ordinary skill in the art, that the food to which the product is added is food for human consumption, and is not animal feed.

Pursuant to the rejection of the claims, the Office Action cites Kearney et al., in combination with Madsen et al., Hyoky et al. in combination with Madsen et al. and Yokio et al. in combination with Madsen et al.

It is respectfully submitted that none of the prior art references, alone or in combination teach, disclose or suggest the present invention.

According to the Office Action, Kearney et al. disclose a process for separating sugar beet juice into different components using chromatographic techniques, producing a product, which is not used as a food for human consumption, as claimed. The product of Kearney et al., i.e., the raw syrup raffinate, is said to be useful for animal feed.

Kearney et al. do not teach, disclose or suggest that the product therefrom could be used in food for human consumption, nor does it teach that the product therefrom would be used to improve the flavor of foodstuff.

In fact, the product, which is claimed herein, as described in the claims, is a non-volatile residue of sugar beet extract after being subjected to membrane filtration and chromatography. The residue after the removal of the volatile in the present invention is typically mostly dark fluid that has a very foul smelling odor. Most people say that they would not want to taste it. In fact, because of its foul smelling properties and its dark color, one of ordinary skill in the art would probably think of adding it to animal feed, but definitely not to a food for human consumption. In fact, one of ordinary skill in the art would not contemplate utilizing such a product for improving the flavor of food for human consumption.

Applicant is not admitting that the product on Kearney et al. is the product produced herein by the present process. However, it is quite apparent that one of ordinary skill in the art, would not add a product that is fit for animal feed, to food for human consumption or to improve the flavor of the food for human consumption. Moreover, there is no teaching or suggestion in Kearney et al. that such a product would be added to any food for human consumption or enhance flavor.

However, it is highly surprising to one or ordinary skill in the art at the time of filing of the underlying application that the product produced in accordance with the present invention enhances flavor.

Thus, Kearney et al. do not teach, disclose or suggest the present invention.

Madsen et al. do not overcome the inadequacies of Kearney et al. Madsen et al. disclose the ultrafiltration of beet sugar juice, with the permeate being used for sugar production. There is no teaching there to add the product to food for human consumption. There is no suggestion therein to combine the product with animal feed or the product that could be used for animal feed.

Thus, applicants respectfully submit that there would be no motivation to combine a product, which would be used for sugar production with a product of animal feed. Consequently, there would be no reason to combine the teachings of Kearney et al. with Madsen et al. Furthermore, if the references were combined, the combination would suggest the addition of the product of Madsen et al. to animal feed. The combination does not suggest the addition of the product obtained from sugar beet extract to food for human consumption. And further, since none of the references alone teach, disclose or suggest that a product is to be added to food for human consumption, the combination would not teach, disclose or suggest a product to be added to food for human consumption. Moreover, since reference alone teaches, discloses or suggests that the food residue obtained from sugar beet extract would improve the flavor of food, the combination cannot teach, disclose or suggest improving the flavor of food by adding the product obtained from sugar beet extract, as claimed.

If anything, because Kearney et al. disclose the use of the by-product of sugar beet extract for animal feed, the combination would teach away from the use of the product therein to be added to food for human consumption.

Hyoky et al. disclose the chromatography of beet molasses. It, however, does not teach any use of the residue collected therefrom. Thus, Hyoky et al. do not teach,

disclose or suggest that the product thereof would be used to improve the flavor of food, as claimed or any food containing the product thereof. Moreover, the Hyoky et al. do not teach, disclose or suggest any foodstuff obtained from the addition of a product obtained from sugar beet extract, as claimed.

Applicants reiterate the comments hereinabove with respect to the teachings of Madsen et al. Madsen et al. do not teach, disclose or suggest that the product thereof is added to food for human consumption or that the product improves flavor of the food. Since neither reference discloses the use of the products therein for enhancing the flavor of food nor suggests or discusses therein foodstuff for human consumption containing same, the combination cannot teach, disclose or suggest the product obtained from sugar beet extract to be added to food on the use thereof for improving the flavor of food, as claimed.

With respect to Yukio et al., the USPTO has misstated the teachings thereof.

Yukio et al. relate to a method for preparing a sugar-like flavorous component based on the components of molasses, which are used as the usual foods (see column 3, line 3). This indicates that the molasses of Yukio et al. are of cane origin and not of beet origin, as in the present invention, since only cane molasses are used as foods.

As shown in the attached chart, the composition of cane molasses is different from that of beet molasses. One of the differences is that cane molasses does not have betaine, while the beet molasses contains betaine. In addition, beet molasses contains pyrazine and DMSD while cane molasses does not.

In the method described in Yukio et al., the components of molasses are recovered using a specific distillation equipment called a Spinning Cone Column (SCC).

In the distillation according to Yukio et al., ion exchange water, ethanol and molasses are added into a feed tank, these components are mixed and dissolved thoroughly with stirring and the resulting solution is introduced into the SCC. The temperature in the column during the distillation is kept between 40 to 60 °C. Thus, the flavorous product recovered in Yukio et al. consists of the volatile components of cane molasses. It is not a chromatographic method.

Thus, the product of Yukio et al. contains volatile components, while the products of the present invention contains the non-volatile components of sugar beet.

The product of the present invention specifically comprises essentially non-volatile components, by which is meant components, which remain in solution even though they are subjected to evaporative (distilling) operations at a temperature as high as 60 to 70 °C (see the specification, page 10, lines 28 to 31).

Although the distillation of Yukio et al. is also a fractionation process, it is not one, which provides a product of essentially non-volatile character. In fact, the evaporation of the volatile components of the present invention is the counterpart of distillation. In an evaporation, as in the present invention, the volatile components are removed. In a distillation, as in Yukio et al., the volatile components are recovered. As evidence of the difference, attention is directed to the attached table and gas chromatographs of the volatile components of cane molasses and beet molasses.

From the table, it is evident that the distillate of the cane molasses (Yukio et al.) contain no pyrazines or DMSD, while non-volatile component of beet molasses contains DMDS as well as pyrazines. On the other hand, the distillate of cane molasses as well as cane molasses contain Beta-damascenone while the beet molasses do not contain the

component. Thus, the volatiles product of Yukio et al. is not the same as the non- volatile product of the present invention.

It is thus clear that the components recovered by spinning cone distillation at 40 to 60 °C in Yukio et al. are volatile chemical compounds totally different from the non-volatile chemical compounds, which remain in solution despite evaporation at 60 to 70 °C and which make up the mixture of the present invention.

While it comes as no surprise to a person skilled in the art that the volatile components of molasses can provide a sugar-like flavor as in Yukio et al., it is by no means obvious that the non-volatile components can improve a flavor when added to food. The residue after the removal of the volatiles is typically a musty dark fluid that most people would not even like to taste.

Thus, it must be understood that the distillation occurring in Yukio et al. by the very nature of the fractionation recovers ONLY volatile components of the molasses. Thus, the process of Yukio et al cannot obtain the essentially non-volatile components of the present invention. The fractionation process of the present invention includes evaporation, the opposite to distillation, i.e. involves the removal of volatile components from the product.

To reiterate the above, the flavorous product recovered in Yukio et al. consists of the volatile components of molasses while the product of the present invention specifically comprises essentially non-volatile components, by which is meant components, which remain in solution even though they are subjected to evaporative (distilling) operations (see the specification, page 10, lines 28 to 31). In a distillation, as in Yukio et al., the volatile components are recovered. Consequently, it should be quite

clear to the skilled artisan that the components recovered by the spinning cone distillation at 40 to 60 °C in Yukio et al. are volatile chemical compounds totally different from the non-volatile chemical compounds, which remain in solution despite evaporation at 60 to 70 °C and which make up the mixture of the present invention. Simply stated, as the SCC process used by Yukio et al. is a distillation process, it cannot possibly yield the non-volatile components obtained by the present invention.

To more clearly differentiate the claimed invention from Yukio et al., as well as the other prior art, the independent claims recite to "a combination of chromatographic separation and membrane filtration". Basis for this amendment can be found in the specification itself. These two fractionation steps, i.e., chromatographic separation and membrane filtration, influence the end product in different ways and provide a product having a totally different composition and totally different properties from any of those obtained by the fractionations used in the cited references. The amended term undoubtedly distinguishes the present invention from that of Yukio et al. coupled with the understanding that the stripping in the SCC distillation apparatus of Yukio et al. recovers only volatiles.

Although Yukio et al. teaches a volatile flavor improver, it is clearly distinguished from the present invention and precludes it from being used as prior art against the present invention.

Madsen et al., on the other hand, relate to ultrafiltration of beet sugar juice. Thus, there would be no motivation for one of ordinary skill in the art to combine Madsen et al. with Yukio et al. since the products are completely different. One of ordinary skill in the art would not combine a teaching relating to the product which contains the sweet

smelling components (Yukio et al.) with a product of beet sugar cane, which is a foul-smelling product. Furthermore, the combination does not teach, disclose or suggest a product prepared from the non-volatile component of sugar beet. The combination would teach the use of a volatile component, which as indicated hereinabove, is quite different from the non- volatile component of sugar beet. Since the product in Yukio et al. is different from the product of the present invention and since Madsen et al. do not disclose or suggest the product of the present invention as being added to food or to improve the flavor thereof, the combination cannot teach, disclose or suggest the product of the present invention being added to food or its use in improving the flavor of food or a foodstuff for human consumption containing this product.

Thus, the combination of Yukio et al. and Madsen et al. do not teach, disclose or suggest the present invention, as claimed.

Therefore, for the reasons provided in the present invention is patentable over the cited art.

Applicants presented the main independent claims to Examiner Wong along with these arguments. Examiner Wong indicated that the process of using the product of the present invention is allowable over the cited art. In addition, for the same reason, the food to which the product is added is also patentable over the cited references.

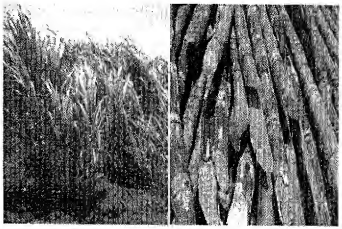
Thus, for the reasons given herein, the rejection of the claims based on the cited references is overcome; withdrawal thereof is respectfully requested.

Accordingly, for the reasons given, it is respectfully submitted that the present case is in condition for allowance, while action is earnestly solicited.

Respectfully submitted,

Mark J. Cohen
Registration No. 32,211

Scully, Scott, Murphy & Presser, P.C.
400 Garden City Plaza, Suite 300
Garden City, New York 11530
(516) 742-4343
MJC:htj



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	Cane Molasses % on DS *	Beet molasses % on DS **
Sucrose	30-40	62
Invert sugar	18	1-4
Betaine	-	4-6
Amino acids	0,5	2-4***
Protein	2.5-4.5	12-13(tot N)
Ash	7-15	14-15
pH	4-5	8-9
Nitrogen	0,4-1.5	2,5

Nitrogenous components and their degradation (pyrazines) products are one main reason for unpleasent taste and odor of beet molasses.****

*Meade-Chen: Cane Sugar Handbook, 11 th Ed. 1985 page 436
** McGinni: Beet-sugar technology, 3 rd Ed. Reprint 1996, page 617
***Rearick,E et al Sugar Industry 132(2007) No 7, 549-552
**** Pihlsgård and A. Kaipainen publications 1994-2000

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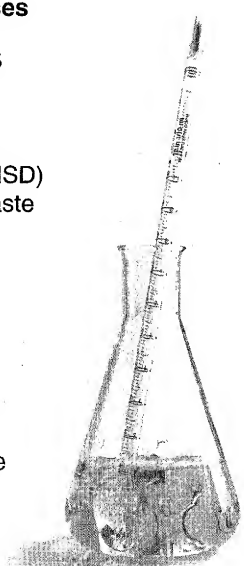
Comparative tests on volatiles of beet and cane molasses

Head space analysis of volatiles by GC and MS
water/EtOH distillation adopted from Yukio US 6,379,735

Beet molasses and distillate	Various pyrazines and dimethyldisulphide(DMSD) Unpleasent odor and taste
Beet molasses fraction	Dark brown Very unpleasent taste Mild odor
Cane molasses and distillate	No pyrazines or DMSD beta-Damascenone Pleasent odor and taste



Comparison analysis on volatiles/ head space analysis TCT-GC-MS

ppm	Cane molasses	Distillate of Cane molasses	Beet molasses	Distillate of Beet molasses
Pyrazines (various)			2.64	6.8
Dimethyldisuphide			0.04	
Beta-Damascenone	+	+		
Butanone, butanal, butanol, butanoic acid	0.6		0.54	
Propanone	0.8	0.4	0.3	
Furanmethanol	0.8	0.8	0.1	
Acetic acid	2		0.2	

Empty cell= not detected, detection limit 0.002 mg/kg (ppm)

Volatiles

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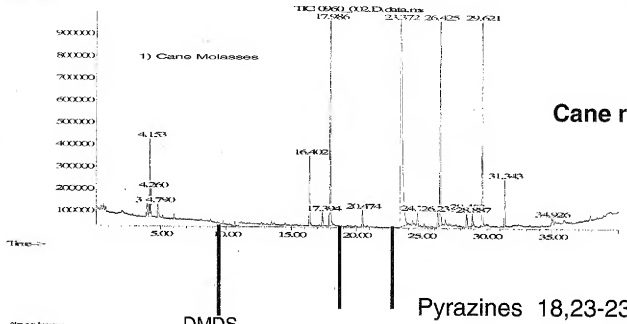
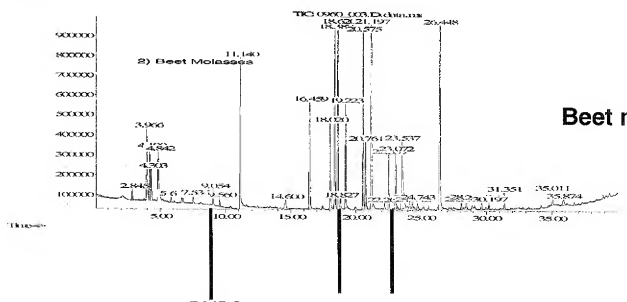


Cane molasses

DMDS

Pyrazines 18,23-23,07



Beet molasses

DMDS

Volatiles of cane and beet molasses distillates

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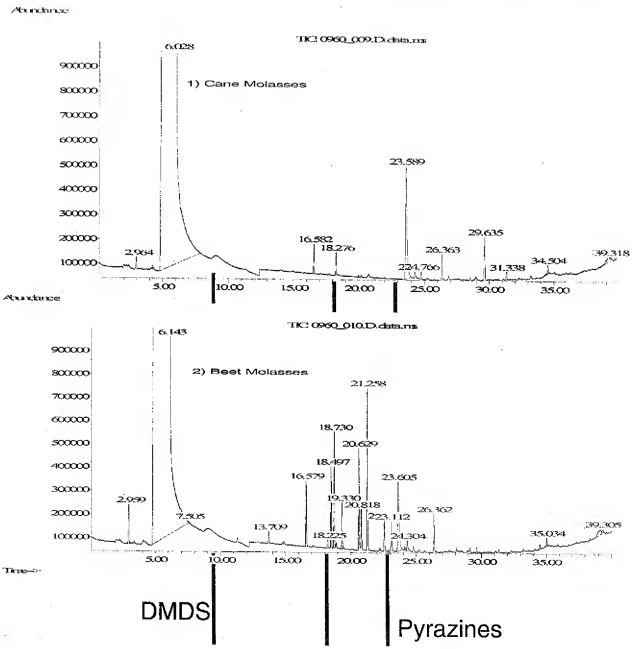
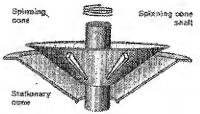


Cane molasses distillate

Beet molasses distillate



Spinning Cone Column (SCC)
is patented by
Flavourtech Pty.Ltd US 4,995,945

Yukio/ **Spinning Cone Column is a distillation or stripping column in which steam removes, under vacuum, volatile compounds from liquids or slurries.**

SCC is not a chromatographic separation process